[0025] Claims

1. A photomultiplier power supply comprising:

a primary transformer winding for receiving an input voltage;

a plurality of power supply cells comprising:

a secondary winding;

a first diode having a cathode connected to the high side of the secondary winding;

a second diode having an anode connected to the high side of the secondary winding;

a center tap connected to the low side of the secondary winding;

a first capacitor having a first side connected to the center tap and a second side connected to the anode of the first diode;

a second capacitor having a first side connected to the center tap and a second ide connected to the cathode of the second diode;

the positive terminal of a given cell connected to the negative terminal of a following cell;

the negative terminal of the first cell connected to a photo cathode, the first center tap connected to a first dynode, and a second dynode connected to a positive terminal of the first cell; and

the series repeated until a resistor connected in series with an anode terminal is reached wherein any unused terminal in a last cell is left unconnected.

2. The power supply of claim 1 wherein the voltage ratio is changed between tube elements by moving a dynode connection from a center tap in a cell to a positive terminal in the cell.

3. The power supply of claim 1 wherein the voltage ratio is changed between tube elements by changing the number of turns in the secondary coil.

4. The power supply of claim 1 wherein the voltage ratio is changed between tube elements by moving a dynode connection from a center tap in a cell to a positive terminal in the cell and changing the number of turns in the secondary coil.

5. A method for providing a photomultiplier power supply comprising:

coupling a primary transformer winding for receiving an input voltage to a secondary winding comprising a plurality of power supply cells;

connecting a first diode having a cathode a high side of the secondary winding;

connecting a second diode having an anode connected to the high side of the secondary winding;

connecting a center tap connected to a low side of the secondary winding;

connecting a first capacitor having a first side connected to the center tap and a second side connected to an anode of the first diode;

connecting a first side of a second capacitor to the center tap and connecting a second side of the second capacitor to a cathode of the second diode;

connecting a positive terminal of a given cell to a negative terminal of a following cell;

connecting a negative terminal of a first cell to a photo cathode, connecting a first center tap to a first dynode, and connecting a second dynode to a positive terminal of the first cell; and

repeating the connection series until a resistor connected in series with an anode terminal is reached; and leaving unconnected any unused terminal in a last cell.

6. The method of claim 5 further comprising:

moving a dynode connection from a center tap in a cell to a positive terminal in the cell to change the voltage ratio between tube elements.

7. The method of claim 5, further comprising:

changing the number of turns in the secondary coil to change the voltage ratio between tube elements.

8. The method of claim 5, further comprising:

changing the number of turns in the secondary coil by moving a dynode connection from a center tap in a cell to a positive terminal in the cell to change the voltage ratio between tube elements.

9. A system for providing power to a photomultiplier for measuring at least one of counts and pulse heights using a down hole tool having photomultiplier tube and photomultiplier power supply comprising:

a down hole tool for traversing a well bore formed in the earth, the tool further comprising;

a photomultiplier tube;

a photomultiplier power supply comprising a primary transformer winding for receiving an input voltage;

a plurality of power supply cells comprising:

a secondary winding;

a first diode having a cathode connected to the high side of the secondary winding;

a second diode having an anode connected to the high side of the secondary winding;

a center tap connected to the low side of the secondary winding;

a first capacitor having a first side connected to the center tap and a second side connected to the anode of the first diode;

a second capacitor having a first side connected to the center tap and a second ide connected to the cathode of the second diode;

the positive terminal of a given cell connected to the negative terminal of a following cell;

the negative terminal of the first cell connected to a photo cathode, the first center tap connected to a first dynode, and a second dynode connected to a positive terminal of the first cell; and

the series repeated until a resistor connected in series with an anode terminal is reached wherein any unused terminal in a last cell is left unconnected.

10. The system of claim 9 wherein the voltage ratio is changed between tube elements by moving a dynode connection from a center tap in a cell to a positive terminal in the cell.

11. The system of claim 9 wherein the voltage ratio is changed between tube elements by changing the number of turns in the secondary coil.

12. The system of claim 9 wherein the voltage ratio is changed between tube elements by moving a dynode connection from a center tap in a cell to a positive terminal in the cell and changing the number of turns in the secondary coil.

13. A method for providing power to a photomultiplier in a down hole tool having photomultiplier tube and photomultiplier power supply comprising:

traversing a well bore formed in the earth, with a down hole tool, the tool further comprising a photomultiplier tube;

providing power to the photomultiplier further comprising,

coupling a primary transformer winding for receiving an input voltage to a secondary winding comprising a plurality of power supply cells;

connecting a first diode having a cathode a high side of the secondary winding;

connecting a second diode having an anode connected to the high side of the secondary winding;

connecting a center tap connected to a low side of the secondary winding;

connecting a first capacitor having a first side connected to the center tap and a second side connected to an anode of the first diode;

connecting a first side of a second capacitor to the center tap and connecting a second side of the second capacitor to a cathode of the second diode;

connecting a positive terminal of a given cell to a negative terminal of a following cell;

connecting a negative terminal of a first cell to a photo cathode, connecting a first center tap to a first dynode, and connecting a second dynode to a positive terminal of the first cell; and

repeating the connection series until a resistor connected in series with an anode terminal is reached; and leaving unconnected any unused terminal in a last cell.

14. The method of claim 13 further comprising:

moving a dynode connection from a center tap in a cell to a positive terminal in the cell to change the voltage ratio between tube elements.

15. The method of claim 13, further comprising:

changing the number of turns in the secondary coil to change the voltage ratio between tube elements.

16. The method of claim 13, further comprising:

changing the number of turns in the secondary coil by moving a dynode connection from a center tap in a cell to a positive terminal in the cell to change the voltage ratio between tube elements.